

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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|---|--|---|-------------------------------------|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| Applicant's or agent's file reference 220-02 | FOR FURTHER ACTION See Form PCT/IPEA/416 | | | | | | | | | | | | | | | | | | | | | | | | | |
| International application No. PCT/SE2005/000460 | International filing date (<i>day/month/year</i>) 31-03-2005 | Priority date (<i>day/month/year</i>) 31-03-2004 | | | | | | | | | | | | | | | | | | | | | | | | |
| International Patent Classification (IPC) or national classification and IPC See Supplemental Box | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Applicant SCANIA CV AB (publ) et al | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>4</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>2</u> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | | | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | | |

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| Date of submission of the demand 28-10-2005 | Date of completion of this report 06-07-2006 |
| Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88 | Authorized officer Dan Ionesco / JA A Telephone No. +46 8 782 25 00 |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITYInternational application No.
PCT/SE2005/000460**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

International patent classification (IPC)**F02M 25/07 (2006.01)**

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2005/000460

Box No. I Basis of the report

1. With regard to the language, this report is based on:



the international application in the language in which it was filed



a translation of the international application into _____, which is the language of a translation furnished for the purposes of:



international search (Rules 12.3(a) and 23.1(b))



publication of the international application (Rule 12.4(a))



international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):



the international application as originally filed/furnished



the description:

pages 1 - 7

as originally filed/furnished

pages* _____

received by this Authority on _____

pages* _____

received by this Authority on _____



the claims:

pages _____

as originally filed/furnished

pages* _____

as amended (together with any statement) under Article 19

pages* 9 - 10

received by this Authority on 27 - 04 - 2006

pages* _____

received by this Authority on _____



the drawings:

pages 1

as originally filed/furnished

pages* _____

received by this Authority on _____

pages* _____

received by this Authority on _____



a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. The amendments have resulted in the cancellation of:



the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____



the sequence listing (*specify*): _____



any table(s) related to the sequence listing (*specify*): _____

4. This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).



the description, pages _____



the claims, Nos. _____



the drawings, sheets/figs _____



the sequence listing (*specify*): _____



any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SE2005/000460

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | | |
|-------------------------------|--------|-------|-----|
| Novelty (N) | Claims | 1 - 7 | YES |
| | Claims | _____ | NO |
| Inventive step (IS) | Claims | 1 - 7 | YES |
| | Claims | _____ | NO |
| Industrial applicability (IA) | Claims | 1 - 7 | YES |
| | Claims | _____ | NO |

2. Citations and explanations (Rule 70.7)

Amended claims have been submitted.

The documents cited in the International Search Report represent the prior art. The claimed invention stated in claims 1 - 7 is not anticipated by these documents. None of the documents or any relevant combination of them reveals an arrangement for recirculation of exhaust gases as described by these claims.

According to the arguments stated above, the invention claimed in claims 1 - 7 is novel and considered to involve an inventive step. The industrial applicability of the claimed invention is obvious.

Claims

- 1.. An arrangement for recirculation of exhaust gases in a supercharged combustion engine (1) whereby the arrangement comprises an exhaust line (3) intended to lead exhaust gases out from the combustion engine (1), an inlet line (6) intended to lead air at above atmospheric pressure to the combustion engine (1), a return line (8) which comprises a connection to the exhaust line (3) and a connection to the inlet line (6), so that via the return line (8) it is possible to recirculate exhaust gases from the exhaust line (3) to the inlet line (6), and a second cooler (9) intended to cool the exhaust gases in the return line (8) by a liquid medium before they reach the first cooler (10).
characterised in that the first cooler (10) is incorporated in the return line (8) for cooling the exhaust gases in the return line (8) by ambient air before they are mixed with the air in the inlet line (6).
- 15 2. An arrangement according to claim 1, characterised in that the liquid medium is adapted to being circulated in a cooling system which is also adapted to cooling the combustion engine (1).
3. An arrangement according to any one of the foregoing claims, characterised in that the arrangement comprises a third cooler (7) for cooling the air in the inlet line (6) before it is mixed with the exhaust gases from the return line (8).
4. An arrangement according to claim 3, characterised in that said first cooler (10) and said third cooler (7) are situated close to one another.
- 25 5. An arrangement according to claim 4, characterised in that the first cooler (10) and the third cooler (7) constitute an integrated unit.
6. An arrangement according to claim 4 or 5, characterised in that the first cooler (10) and the third cooler (7) take the form of flat cooler packages which each have a main extent in one plane, whereby the first cooler (10) and the third cooler (7) are situated

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relative to one another in such a way that they have an extent in a substantially common plane.

7. An arrangement according to any one of claims 4 to 5, characterised in that the first
5 cooler (10) and the third cooler (7) are situated close to a fourth cooler (15) which is intended to cool the coolant in a cooling system.